The Central Alaska Network

Vital Signs of the Central Alaska Network

Monitoring Framework	Vital Sign	Parks Where Monitored		
		DENA	WRST	YUCH
Air and Climate	Air quality	○		
	Climate	●	●	●
	Snow pack	●	●	●
Geology and Soils	Glaciers	●	●	
	Permafrost	●	●	●
	Disturbance - volcanoes and tectonics	+	+	+
Water	Disturbance - Stream flooding	●	●	●
	River/stream flow	●	●	●
	Water Quality	●	●	●
Biological Integrity	Freshwater fish	●	●	●
	Passerines	●	●	●
	Bald Eagle		●	
	Golden Eagles	●		
	Peregrine Falcon			●
	Ptarmigan	+	+	+
	Moose	●	●	●
	Sheep	○	●	○
	Small mammals	●	+	+
	Caribou	●	●	○
	Snowshoe hare	●	●	●
	Arctic ground squirrel	+	+	+
	Wolves	●	+	●
	Brown Bear	+	+	+
	Vegetation structure and composition	●	●	●
	Disturbance - Exotic species	+	+	+
	Insect Damage	+	+	+
	Subarctic steppe			+
Human Use	Consumptive use	○	○	○
	Human populations	+	+	+
	Human presence/use	+	+	+
	Trails	+	+	+
Landscapes	Disturbance - Fire occurrence and extent	○	○	○
	Land Cover	●	●	●
	Soundscape	○	+	+
	Plant phenology	○	○	○

● Vital signs for which the network will develop protocols and implement monitoring with funding from the vital signs or water quality monitoring program.

○ Vital signs that are currently being monitored long-term by a network park, another NPS program, or by another federal or state agency. The network will collaborate with these other monitoring efforts where appropriate but will not use vital signs or water quality monitoring program funds.

+ Vital signs for which monitoring will likely be done in the future but which cannot currently be implemented due to limited staff and funding.

NPS photograph

By Maggie MacCluskie

The Central Alaska Network (CAKN) includes three national parks that encompass 21.7 million acres of land. Parks included in the network are: Denali National Park and Preserve (DENA), Wrangell-St. Elias National Park and Preserve (WRST) and Yukon-Charley Rivers National Preserve (YUCH). To put the area encompassed by the network into perspective, the network acreage is larger than the entire state of Maine. The parks in the network span an ecological gradient that ranges from 125 miles (200 km) of coastline in WRST and continues north through the Alaska and Wrangell mountain ranges, which are dotted with numerous glaciers. The northern border of the network ends in YUCH where the preserve is characterized by classic fire-driven boreal forest that flanks the Yukon River for 125 mi (200 km).

From the coastline of WRST to the northern border of YUCH is about 800 miles, and it is this expanse which characterizes the network. For example the average annual precipitation on the coast of WRST is 144 inches (366 cm), while at the northern end of the network only 12 inches (30 cm) of precipitation fall during the year. Though the landscape of the network parks changes drastically from south to north, the animal and plant species present in each are very similar. All three parks have intact populations of large carnivores like bears and wolves and have the prey species to sustain them (caribou, moose, sheep). Likewise, each park is home to a diversity of bird species including breeding populations of eagles and falcons. The existence of these groups of animals is indicative of the most notable and overriding feature of the network, which is the integrity of the ecosystems the boundaries encompass. The designation of both DENA and WRST as biosphere reserves serves to underscore this fact.

Figure 1. A tranquil view of Ptarmigan Lake, Wrangell-St. Elias National Park and Preserve.

Developing a monitoring program for such a diverse area is a tremendous opportunity and a tremendous challenge. The network spent four years developing the program with biologists and ecologists in each of the parks, along with external advisors.

The result is a program that is closely tied to the natural resource work conducted in each park. During 2009, the fourth year of program implementation, the network monitored air quality, climate, snow pack, water quality in the form of shallow lakes and streams, vegetation, small mammals, song birds, eagles (golden and bald), peregrine falcons, caribou, moose, and wolves. The results of this work are given back to the parks in the form of databases, reports, presentations and handouts. Ultimately, the goal of all this work is to allow parks to incorporate the information in their planning and management of park resources.

NPS photograph

Figure 2. A magnificent view of Mt. St. Elias from Icy Bay, Wrangell-St. Elias National Park and Preserve.